

A Simple Approach to Using Electronic Quality Control Data

C. Suzanne Chamberlain, Tina Carlsen,
Nina Hankla, Valerie Kiszka, Patricia Ottesen,
Lawrence Livermore National Laboratory

Quality control and data qualification can be expensive and time-consuming; however, defensible data requires the identification of data quality. Programs exist to electronically assist in these data tasks in the Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) Format. CADRE and E Format are two such programs that are detailed and very thorough. However, unless the data are received as CLP packages, these programs are difficult to apply. The Lawrence Livermore National Laboratory (LLNL) Environmental Protection Department has been receiving cost-effective analytical results from commercial laboratories electronically since 1986 in ASCII files with record and row orientation. Although, it would be difficult to apply the CADRE or E Format programs to these ASCII files, all these data should be checked. This paper describes how a simplified quality control electronic program was developed and implemented to accomplish appropriate checking.

Basic sample identification and analytical result data were already being transferred electronically. Elements needed to evaluate data were determined. The data elements were organized into specifications for electronic transfer files. One specified file contained the quality control (QC) data; the other file linked the QC data to the sample and the analysis data. Once this receivable was tested and well defined, a program was written that evaluated the QC data and set pre-defined flags for the analytical results. The program was written in Structured Query Language (SQL) and used in INGRES, a relational database management software. Each electronically assigned QC flag is confirmed based on the QC chemist's evaluation. This paper will explain in detail the data elements and the rules used to evaluate data quality and how flags for the analytical data are defined and assigned.

Work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract W-7405-Eng-48.